

## LEASH FOR ANIMALS, APPLICABLE TO A VEHICLE

The present invention relates to a leash for animals able to be applied to a vehicle, and in particular it refers to the case of a dog leash able to be applied to a vehicle with two or three wheels, with or without engine propulsion, such as bicycles, tricycles, mopeds, sleds.

US 4854269 teaches a retention device that is fastened to the frame of a bicycle to keep a dog at the leash, while keeping both hands on the handlebar. The device comprises a bracket that is fastened to an upright of the frame, a first bar that extends laterally to the bicycle and is secured to the bracket, a second bar elastically connected to the first by means of a helical spring working in traction, a cable connected to the end of the second bar opposite to the spring, a pair of notched rings which, by opening, release the dog from the retention device, if the dog stresses the bicycle frame with excessive force.

US 4134364 discloses a device constituted by a single bar fastened to the bicycle frame.

The bar is provided with a flexible pivot pin whereto is anchored a small chain in such a way that said pivot pin constitutes an automatic release means in case of excessive stress exerted by the dog.

CA 2151542 teaches a device constituted by a bar connected to a bicycle frame by means of a rotating joint, in correspondence with the axle of the rear wheel. The joint allows the bar to oscillate in the vertical and horizontal direction according to the dog's movements. The bar has in its interior a helical spring that operates in traction and is connected to a rope that terminates with a spring catch for connecting a collar.

DK 9600464 discloses a device constituted by a bar fastened to the frame of a bicycle and provided with a spring that works in traction and is connected to a small chain.

All the aforementioned documents illustrate devices wherein the bar or bars fastened to

the bicycle frame can be removed with difficulty therefrom, by unscrewing the anchoring bracket or unscrewing the bar, or removing the locking means with difficulty.

An additional drawback of the prior art is that it provides for the use of a single spring operating in traction, which is thus prone to weakening.

5 A further drawback is the impossibility of adequately adjusting the height of the device to the height of the dog, also taking into account its mass.

Another drawback is given by the fact that, when the dog's owner stops, gets off the bicycle and wishes to walk with his/her dog, (s)he needs to have a leash to attach to the dog collar.

10 An aim of the present invention is to eliminate the aforesaid drawbacks and to make available a leash which can be applied to a bicycle in easily removable fashion.

An additional aim is to make said leash suitable to dogs or animals of different sizes, within the scope of a simple and economical solution.

Said aims are fully achieved by the leash of the present invention, which is characterised  
15 by the contents of the claims set out below and in particular in that it comprises a bar, anchored to the vehicle and internally hollow, which houses one or more springs operating in compression when the animal stresses a rope connected to the bar.

The means for securing the bar to the frame of the vehicle preferably comprise a pair of semi-cylindrical jaws that encompass the frame and are fastened thereto by means of bolts  
20 or lever systems (for instance those already in use in bicycles), in which one of the two jaws has a protuberance so shaped as to be anchored in a corresponding cavity of a rapid snap-on coupling of the female type, screwed to an end of the bar.

The bar, in correspondence with the vehicle-side end can be provided with a grip or handle for use as a normal leash once the bar is detached from the vehicle.

25 This and other characteristics shall become more readily apparent from the description

that follows of a preferred embodiment shown, purely by way of non limiting example, in the accompanying drawing tables in which:

- Figure 1 shows an exploded view of the leash and the means to associate it to a vehicle and to a collar of an animal;

5       - Figures 2 and 3 schematically show the application of the leash on a vehicle, in this specific case a bicycle.

With reference to the figures, the number 1 designates a hook, of the type commonly called "spring catch", able to be anchored to the collar, not shown herein, of an animal, typically a dog.

10       The spring catch 1 constitutes means for latching onto the collar of an animal.

A string 2 or rope, which may be elastic, is inserted in an eyelet of the hook and then traverses, substantially in bifilar form, a closure ogive or cap 3 and three springs 4 to be closed in a terminal knot downstream of said three springs, which are housed inside a hollow bar 5.

15       The bar 5 is coated with a grip or handle 12 in correspondence with an end in which a female snap-on rapid coupling 11 is screwed, destined to interact with a corresponding protuberance 13 exhibited by a front jaw 8.

The front jaw 8 and a rear jaw 7, substantially with semi-cylindrical shape, encompass, preferably with the interposition of a sheath 6, around the frame of a bicycle (Figures 2 and 3) or of another vehicle such as a tricycle or a moped, typically in the area underlying the seat, and are fastened to the frame itself by means of bolts constituted by screws 9 and nuts 10, or are fastened to the frame by means of lever systems of the type already commonly used in bicycles.

25       The jaws with the sheath and the bolts are first securing means permanently fastened to the frame of the vehicle, although it is possible to disassemble them acting on the bolts.

Said first securing means interact with second securing means associated with the bar and constituted by the quick coupling fitting 11, in order globally to constitute means for securing the bar to the frame in easily removable fashion.

5 The type of securing is particularly rapid and effective and uses a hollow quick coupling fitting 11 and a protuberance 13 which are substantially similar to the couplings used in the field of garden and lawn irrigation to connect the spraying hoses to taps or to other tools.

The grip 12 serves as a handle for the operator to use the bar as a normal leash once it is detached from the vehicle.

10 The bar contains within it three springs 4, but there could also be one spring or in any case a number other than three, which can easily be replaced simply by unscrewing the ogive 3 and untying the terminal knot of the rope. The replacement of the springs can serve to adapt the leash to dogs or animals of different size, hence destined to the stress the vehicle with more or less intense force.

15 The end of the spring closest to the frame of the vehicle is tapered, i.e. it has a conicity, clearly shown in the figure, to allow a simple terminal knot to prevent the rope from returning in the spring. Essentially, the exit hole of said spring will be only slightly larger than the diameter of the spring or of the springs that traverse it.

20 The fact that the rope passes through the eyelet of the hook 1 and returns in bifilar form through the springs enables a single node to be able to fasten the rope, but according to a different embodiment, not shown herein, the springs may be traversed by a single cable, knotted at the exit from the springs and also knotted to the eyelet of the hook.

25 Unlike the prior art, the present invention allows a rapid fastening and unfastening by coupling/uncoupling the bar to the frame of the bicycle and it also allows to use the bar, once it is detached from the frame, as a normal leash without the user's having to bring

with him/her an additional leash when (s)he wishes to walk with his/her dog.

The fact that the springs work in compression assures their duration, and it provides a physical limit to the possible travel of the spring 2 as a consequence of the stresses imparted by the dog, both when the leash is held by the user's hand and when the leash is anchored to the vehicle.

The present invention also allows to use the same bar on different bicycle (for instance owned by the same family), previously provided with the fastening jaw alone and for this reason the bar with the rope may be sold separately from the means for fastening to the vehicle.

As shown in Figures 2 and 3, the leash is positioned projecting laterally from the vehicle, in the specific case a bicycle, and the bar takes on a configuration that is substantially horizontal or inclined downwards by  $0^{\circ}$  -  $30^{\circ}$ , (Figure 2) and substantially orthogonal to the longitudinal axis of the vehicle or slightly inclined backwards (Figure 3) by about  $0^{\circ}$  -  $35^{\circ}$ .